SCIENCE & GOVERNMENT REPORT

23rd Year of Publication

The Independent Bulletin of Science Policy

Volume XXIII, No. 1 | P. O. Box 6226A, Washington, D. C. 20015 | © January 15, 1993

Clinton Surprises and Pleases With Science Adviser Choice

Though naturally disposed to carping, the Washington science-policy crowd is immensely pleased by the selection of John H. Gibbons, Director of the Congressional Office of Technology Assessment (OTA), as Bill Clinton's Science Adviser and Director of the Office of Science and Technology Policy (OSTP).

"Practically everyone likes Jack Gibbons," SGR was told by a Congressional staff member who customarily rations expressions of kindness. The favorable reaction, however, goes beyond the personal affability of the head of OTA, an organization with a budget of $24 million, a staff of 110, and thousands of consultants. Rare among government organizations these days, OTA is a happy place to work. Respected by Congressmen for its prowess in policy research, it is regularly viewed with envy by visiting foreign parliamentarians and science officials who wish their legislatures were so equipped.

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The Big Theme in Science Policy—P.5

As head of what is referred to as Congress's "think tank," Gibbons has been steeped in issues of science, technology, and government since 1979. A PhD physicist, he is a successful practitioner of the art of talking science to politicians. Virtually all are untutored in science, technology, or medicine. Ignorance of these topics among many Members of Congress is substantial.

One of Capitol Hill's most loyal customers for OTA studies was its most eager student in science-related matters, Vice President-elect Al Gore, who recommended Gibbons' appointment to Clinton. As a member of the House and then the Senate, Gore relied heavily on OTA in his many explorations of sci-tech issues, particularly concerning the social implications of biotechnology. Gore and Gibbons share a commitment to environmental purity and energy conservation. From 1969-73, Gibbons directed the Environmental Program at the Oak Ridge National Laboratory, in Tennessee, Gore's home state.

During the campaign, Clinton announced that Gore would preside over his Administration's technology programs [SGR, October 15: "Clinton Picks Gore to Lead Industrial Technology Drive."]. The practical meaning of that designation is not yet clear. But, in any event, the well-established

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Some R&D Chiefs Pining To Stay on With Clinton

The siren song of academic presidencies has gained the attention of Walter Massey, Director of the National Science Foundation, who's been talking with major-league university recruiters over the past several months.

But while Massey does not seem disinclined to move on, strenuous efforts to survive in the Clinton Administration are being put forth by Bush appointees at three other research-related agencies—Bernadine Healy, Director of the National Institutes of Health; Daniel Goldin, Administrator of NASA, and David Kessler, Commissioner of the Food and Drug Administration. At this point, there's no word on the fate of any of them.

Massey, who became NSF Director in March 1991, was

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In Brief

The NIH Strategic Plan remains on hold as the Bush Administration fades away. A heartfelt project of NIH Director Healy, the Plan consumed thousands of hours of biomedical talent over two years, and stirred acrimonious controversy about NIH's goals. Various drafts went back and forth between NIH and the Department of Health and Human Services, which regarded the exercise as an empire-building gambit by Healy. With days to go, the Plan, sitting for months on the desk of HHS Secretary Louis Sullivan, remained unapproved and is to be bequeathed to the Clinton Administration.

Rep. Louis Stokes (D-Ohio) becomes a key figure in NSF's fiscal affairs with his ascendancy to the Chairmanship of the Appropriations Subcommittee for the Foundation. Stokes, who succeeds Bob Traxler (D-Mich.), a weary, voluntary retiree from politics, has usually confined his questioning at hearings to NSF's programs to encourage minority careers in science.

Rep. John Dingell and the editor of the *New England Journal of Medicine*, Jerome Kassirer, are still haggling about publication of the Shattuck Lecture, delivered last May by Dingell at Kassirer's invitation, and customarily published in the *Journal*. Recoiling at Dingell's harsh remarks about Robert Gallo, the NIH AIDS researcher who has since been judged guilty of scientific misconduct, Kassirer proposed their deletion from the published version [SGR, October 1]. Dingell protested that the custom is to publish as delivered. Kassirer then expressed queasiness about Dingell's references to other scientific misdeeds. At last report, the Congressman and the editor-physician were still at it.

. . . Unlike Predecessors, Gibbons Got an Early Call

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relationship between Gore and Gibbons suggests harmony rather than bureaucratic rivalry.

The timing of the Gibbons appointment, announced early in the transition period, has also contributed to the favorable response. The Capital's science community regards elective politics as insensitive to the needs and vulnerabilities of the research enterprise. The symbol of neglect in past transitions has been the dawdling pace of filling the White House science post. In addition to coming early, the Gibbons' appointment was bunched by Clinton with a flock of cabinet-level selections—a notable juxtaposition in protocol-minded Washington.

The formalities of Gibbons' FBI clearance, ethics reviews, financial disclosures, and Senate confirmation won't be completed until perhaps well into February. No matter. Gibbons will be on board on the first day of the Administration he serves, besides having had the head start of an early appointment and residence in the Washington area. His recent predecessors were hired long after opening day and then had to disengage themselves from their existing jobs and move to Washington. In the meantime, prior arrivals at the White House and in the agencies had long been at work forming alliances and pushing their own agendas.

Gibbons' immediate predecessor, D. Allan Bromley was summoned by the Bush Administration in April 1987—four months after Inauguration Day, and didn't settle in fulltime until September.

Ronald Reagan initially considered abolishing the White House Science Office or moving it elsewhere, but was dissuaded by David Packard and other high-tech industry friends. But then none of the big-league R&D figures recommended to Reagan would touch a job that was apparently of little importance to the President. A young physicist virtually unknown in Washington, George Keyworth III, was summoned from the Los Alamos National Laboratory, and, five months after the Reagan Administration began, was installed as White House Science Adviser.

Compared to Bromley and Keyworth, Frank Press, who served as Jimmy Carter's Science Adviser, was an early arrival. Even so, it wasn't until three weeks after Inauguration Day that Carter offered Press the appointment.

Gibbons comes to the White House job with a halo acquired as the last-chance Director of OTA, an experiment in Congressional advising that went wrong almost from the day that Congress created the organization in 1972. Regarded by the Nixon White House and Congressional Republicans as a government-supported think tank for Senator Kennedy's liberal agenda and possible Presidential aspirations, OTA was left penniless for the first year of its existence.

It first began to function in the spring of 1974, with its legislator creator, former Congressman Emilio Q. Daddario, a Connecticut Democrat, as Director. Amid constant sniping about its ideological bent, Kennedy's role in its management, and cost overruns on several studies, OTA staggered along until Daddario quit in 1977.

High hopes were held out for his successor, Russell W. Peterson, former Governor of Delaware, but after 14 wobbly months at the helm, Peterson departed for the presidency of the National Audubon Society, stressing, as he went, that he had not sought the Audubon job, but could not turn it down.

At that point, the elders of Congress seriously considered terminating OTA as a promising idea that just didn't work out in the politically scented atmosphere of Capitol Hill. But they decided to give it one more chance after meeting with Gibbons, who at that time was in his fifth year as Professor of Physics and Director of the Energy, Environment, and Resources Center at the University of Tennessee. Prior to that, Gibbons had served for a year in Washington as Director of the Office of Energy Conservation in the Federal Energy Administration. Amid the turbulent energy politics of that period, he had acquired a reputation as an unintimidating scientist who made difficult subjects understandable to Congressmen.

Following his appointment, in June 1979, OTA rapidly settled down and earned a reputation as a reliable, nonpartisan examiner and analyst of legislative issues with major scientific and technological components. Departing from his predecessors' quest for free-ranging autonomy along the lines of an academic research organization, Gibbons closely tied OTA's activities to the ongoing legislative agenda.

In the process, OTA refashioned the definition of technology assessment, deemphasizing the commonly understood goal of looking over the horizon to glimpse the effects of embryonic technologies. It still does a bit of that. But, by and large, OTA looks at problems of interest to Congress, analyses the ingredients, and enumerates the virtues and defects of various legislative responses. Its major reports leave little unsaid about a subject and, usually, only experienced between-the-lines readers can detect the direction that OTA favors.

Gibbons effectively used OTA's Board of Representatives and Senators as a shield against frivolous assignments

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Published by Science & Government Report, Inc., twice monthly, except once each in January, July, August, and September. Annual subscriptions: Institutions, $395.00 (two years, $670.00). Bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. NW, Washington, DC 20015. Tel. (202) 244-4135. For subscription service: PO Box 6226A, Washington, DC 20015. Tel. 1-800-522-1970; in Washington, DC 785-5054. SGR is available on University Microfilms International. Claims for missing back issues will be filled without charge if made within six weeks of publication date. ISSN 0048-9581.

Gallo AIDS Paper Deliberately in Error, Report Says

Deemed guilty of scientific misconduct in the latest round of official findings on his AIDS research, Robert C. Gallo says he's the victim of "a mindless pursuit of fantasied misconduct" by an "incompetent government investigation."

Despite the polemical flair of Gallo and his combative attorney, Joe Onek, the misconduct finding is rooted in a meticulous study of Gallo's role in the identification of the AIDS virus and development of the HIV blood test. Smokescreens are going up, but the damning facts behind them remain solid.

Issued last month by the Office of Research Integrity (ORI) in the Department of Health and Human Services, the misconduct finding was based on a review of the lengthy investigation conducted by the since-abolished Office of Scientific Integrity, the predecessor of ORI.

The verdict, Gallo insists, arises from a "distorted interpretation" of a single sentence in a 1984 paper that he co-authored in *Science*. The sentence, referring to the LAV virus sample that the Pasteur Institute provided to Gallo's laboratory at the National Institutes of Health, states that "the virus has not yet been transmitted to a permanently growing cell line"—an assertion that undercut the French claim that LAV was the cause of AIDS.

As a consequence of that report by the renowned Gallo, ORI concluded, AIDS researchers were misled into believing that Gallo's candidate for the cause of AIDS, HTLV-IIIB, was the only HIV isolate grown in a permanent cell line. The report delicately states that Gallo's tactic "had the potential to impede the rapid advancement of research efforts..."

The old OSI, which concluded that Gallo had committed many scientific sins, but none amounting to the ultimate, scientific misconduct, let the disputed sentence pass as ambiguous but plausible.

However, an expert advisory committee for the OSI investigation, chaired by Professor Frederick Richards of Yale, concluded that the statement was "simply false, and was known to be false at the time the paper was written." Describing the sentence as "part of the pattern of misrepresentation," the Committee said "There is no way in which Dr. Gallo can be excused from sharing the blame for this misstatement."

The ORI report notes that an early draft of the paper by Gallo's lab subordinate growing the cultures, Mikulas Popovic, acknowledged that Gallo's lab had successfully grown the French virus. "Dr. Gallo," the ORI report states, "struck those references from the Popovic paper despite Dr. Popovic's objections and informed Dr. Popovic that the data and information on LAV were released more appropriately in a joint publication with the French."

Gallo is described in the ORI report as showing "Indifference to acknowledging promptly the contributions of others and to sharing of research materials of critical public health importance." The ORI asserts that "Gallo intended the statement to deceive others regarding the growth of" the French virus.

On the positive side, the ORI report states that Gallo and his research team "were instrumental in identifying the AIDS virus and protecting the blood supply from contamination with the virus."

Popovic was deemed guilty on four charges of scientific misconduct, mainly concerning records of the research. But, apart from what ORI refers to as the "opprobrium" of the misconduct findings, neither drew a harsh penalty. NIH was directed to keep a watch on Gallo for three years, while "close supervision" was prescribed for Popovic, who long ago left NIH.

Gallo said he will appeal. Popovic has not been heard from.

White House Science Adviser

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and excessive demands for service. Congressmen are always looking for free help, whether to pursue a legislative goal or to help a constituent student with a term paper. The Board—six from each house divided evenly between the parties—must approve OTA study assignments. As might be expected, the busy legislators rely on the OTA Director for judgment in these matters.

When the Washington grapevine was buzzing with speculation about whom Clinton would choose for Science Adviser, the odd fact is that Gibbons' name was never mentioned. Presidential science advisers, with only a few exceptions, have come from universities—as did Bromley (Yale) and Press (MIT). A track record in basic research followed by a role in academic administration is common to most of them. The White House science office has, in fact, functioned as a guardian of academic science, to the point where each Science Adviser, upon taking office, defensively declares that he's not there to represent anyone but the President.

Any departure from the general pattern, it was widely felt, would be in the direction of experience in high-tech industry—sorely in need of government help, according to Candidate Clinton. Under that specification, several names went into the lead among the off-track handicappers, including: Mary Good, Senior Vice President of Allied-Signal; Lewis Branscomb, now at Harvard, formerly Chief Scientist of IBM and Director of the National Bureau of Standards, and Erich Bloch, formerly of IBM, past Director of NSF, and a central figure in the industrial rejuvenation studies produced by the private Council on Competitiveness.

After Gibbons' appointment was announced, SGR called around for responses. They all came in two parts: (1) I never thought of Gibbons, and (2) it's a perfect choice.—DSG

. . . Hopeful Agency Heads Issue Glowing Reports

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chatting with the academic headhunters before election day. He discussed the presidency of Duke University last year and has also had discussions about the Chancellor's job at the Irvine campus of the University of California, as well as the vice presidency of the UC statewide system. Whether he received offers is not known, but the willingness to talk about another job represents a quick turnabout on the part of the NSF Director. Last January, in one of his occasional discussions with science writers, Massey was asked about reports that he was under consideration for the presidency of Stanford.

Massey replied: "I've been in contact with no one. Period. I came here with the intention of staying here. Certainly, I'm not going to leave now. My God, I just started.... Every time there's a search for a [university] president, my name shows up. It's not unexpected. I'm not being immodest, but I'm fairly experienced, and that shouldn't be surprising" [SGR, February 1].

Ironically, Massey's NSF job is more secure than any of the science posts, though not absolutely secure. By statute, the NSF Director holds a six-year Presidential appointment—with four to go for Massey—but the Director also serves at the pleasure of the President, who can dispatch him at will. As an independent agency closely identified with university science, NSF has usually been spared the plank-walking that accompanies changes of administration.

Whether the Clinton Administration would follow custom is not known. The transition team that reviewed NSF for Clinton and company got earfuls of gripes from NSF staff members about Massey's managerial style, which was said to be non-consultative and largely in the hands of a palace guard. Massey was also described as too keen for a larger NSF role in industrial technology. And, of course, staffers said morale was low, *de rigueur* in the federal establishment.

NIH Director Healy, in office since April 1991, is not coy about her interest in keeping the job. As she has told others, she told SGR recently that she hopes to stay on, and is awaiting a decision. In past changes of Administration, the NIH Directorship has been excluded from instant change, but after a respectable period—usually about six months—ousters have occurred.

The post is an open-ended Presidential appointment, but the most influential decision maker has usually been the Secretary of NIH's parent agency, the Department of Health and Human Services. Bethesda has reminded inquirers that the Secretary-designate, Donna Shalala, serves on the NIH Director's Advisory Committee. But the link is a modest one.

Working against Healy is her identification with Republican Administrations, dating back to service in the White House Science Office under Reagan. She has also repeatedly clashed with one of the senior barons of Capitol Hill, Rep. John Dingell, whose cooperation is indispensable for the success of Clinton's legislative program. Dingell's crew ascribes boundless villainies to Healy, especially in regard to what they consider whitewashing of scientific misconduct cases.

Dan Goldin, head of NASA since last April, is also frank about his desire to hang on. In his favor, he points out, he's a Democrat. As though counting on a long tour, he's been lopping off senior heads, making new appointments at the agency and, as he acknowledges, rousing great animosities among the old guard. Though NASA has never muted its public-relations tooting, the Goldin era has brought an unprecedented celebratory din.

A 25-page press release issued in December quotes Goldin as saying, "NASA is leading the way in a worldwide resurgence of space sciences.... This year is one for the record books. Because of the successes of our operational spacecraft and the new missions undertaken this year, we can look forward to an exciting and increasingly productive future."

Kessler, who also wants to retain his job, is widely credited with restoring morale, integrity, and muscle to a moribund FDA since his appointment in November 1990. A physician and attorney who specialized in regulatory law, Kessler has a flair for publicity that grates on his targets. For example, early in his tenure, to highlight FDA's concern about inaccurate food labeling, he made a fullscale fuss about citrus juice from concentrate being labeled "fresh," perhaps a matter of legal and semantic importance, but of little or no nutritional importance, and of relatively low consequence in FDA's awesome backlog of real problems.

Like NASA's Goldin, Kessler issued a year-end statement of accomplishments, though covering only 13 pages.

A Bush-appointed regulator who regulates, Kessler is viewed by the political right as an ill-chosen misfit. Invoking the vituperative spirit that Kessler rouses in those circles, the *Wall Street Journal* condemned him up and down in a lead editorial on January 12, warning Clinton that "David Kessler is the archetypal bureaucratic empire builder, the sort who makes all kinds of enemies for a President."

With an endorsement like that, Kessler might get the nod to carry on for Bill Clinton.—DSG

Bromley Returning to Yale

D. Allan Bromley plans to return to Yale , where he was Professor of Physics and Director of the Wright Nuclear Structure Laboratory when President Bush appointed him as his Science Adviser in 1989.

Though Bromley retained his tenure, he told SGR recently that he doesn't know what he'll do when he gets back to Yale. The university normally limits leaves to two years, he said, but allows for year-by-year extensions for Presidential appointees if the US President makes a personal request to the Yale President.

In Science Policy, Too, "It's the Economy, Stupid"

All across Washington's policy spectrum, they're humming the same tune about science, namely, that it's got to do more for the economy. The utilitarian theme has never been absent from political discourse about research, but on the eve of the Clinton Administration, the unanimity is worth noting as an omen of things to come. Following are extracts from recent policy statements and discussions.

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Rep. George Brown (D-Calif.), Chairman, House Committee on Science, Space, and Technology. Federal mechanisms for funding and administering research have remained relatively unchanged for 45 years. However, there appears to be a growing mismatch between the demands and expectations of the research community (forged during the 1950's and 1960's) and the goals of policy makers (which reflect current political, economic, and societal pressures). Fundamental problems facing our society require interdisciplinary research approaches rather than reliance solely on traditional disciplinary paradigms. There is a recognized need for closer cooperation between private and public sector scientists, as well as between US and foreign scientists, and natural and social scientists....Finally, and perhaps most conspicuously it is becoming increasingly clear that maintaining the world's preeminent (and most expensive) federal research system is not, in and of itself, adequate to insure economic vitality....

In 1991, 38 percent of all federal, non-defense research funds went to universities. Intramural federal laboratories were the second largest research performer, receiving 28 percent of all non-defense funds. Industrial performers received 11 percent, and university-administered National Laboratories received 10 percent. How do we know that this is an optimal distribution? We don't.

In attempting to rethink the fundamental nature of federal science policy, it must be recognized that the community of federally funded researchers shares many attributes with other interest groups that receive federal support: it resists change; it seeks additional resources as a cure for internal stress; it develops political (i.e., subjective and partisan) strategies to promote its agenda and demonstrate the need for special treatment; it unselfconsciously gives its own values primacy; and, in particular, it strives to show that it is an essential contributor to the national interest.

***Report of the Task Force on the Health of Research*, July 1992, available without charge from: Science, Space, and Technology Committee, Press Office, House of Representatives, 2320 Rayburn H.O.B., Washington, DC 20515; tel. 202/225-3359.**

Senate Appropriations Subcommittee for the National Science Foundation. While recognizing the role the Foundation has played in establishing US leadership in basic research over the past 40 years, the Committee believes that the new world order requires the Foundation to take a more activist role in transferring the results of basic research from the academic community into the market place. The Committee believes the Foundation will play the key role in making the Nation's academic research infrastructure more accessible to those endeavoring to build America's technology base and improve US economic competitiveness. This role should include: opening up applied research programs to greater participation by nonacademic personnel; making education programs better prepare future scientists and engineers for the needs of industry; and building day-to-day working relationships with other federal agencies whose missions require cutting edge technology. The Committee directs the Foundation to revise its strategic plan to address these issues and include in the plan yearly funding and personnel requirements to accomplish these goals.

Report by the Senate Appropriations Subcommittee for NSF, *Department of Veterans Affairs and Housing and Urban Development and Independent Agencies Appropriations Bill, 1993*, August 3, 1992, Calendar No. 588, Report No. 102-356, available without charge from: Documents Room, US Senate, Hart Building, Room B-04, Washington, DC 20515. No telephone orders.

Bernadine Healy, Director, National Institutes of Health. I'm always amazed that the scientific community thinks that speaking of economic competitiveness is inappropriate, as if economic benefit from the knowledge we generate is some kind of sin or betrayal of science.... The opportunity for NIH to contribute to the economy *ennobles* NIH. I see it [competitiveness] as something to be celebrated. I'm shocked anyone would say there is something wrong with it. We have to shift the culture a bit ... We have to enlarge the scope of scientists. This is the new world.

Interview in the December 1992 issue of *Challenges*, newsletter of the Council on Competitiveness, available without charge from: Council on Competitiveness, 900 17th St. NW, Suite 1050, Washington, DC 20006; tel. 202/785-3990.

President's Council of Advisers on Science and Technology. Despite recent gains in building linkages between US universities and industry, there are still too many individuals in both sectors who hold to negative perspectives, attitudes, and stereotypes about the other sector: new PhDs who view taking a job in industry as "selling out" rather than following an academic calling; industry managers who are unwilling to send their best people to a university setting, even for a short time; faculty members who believe that their only educational mission is to train students for faculty positions and who channel their best students away from non-academic careers; industrialists who view university work as an intellectual luxury; academics who view indus-

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. . . Clinton: US Lags in Profiting From Basic Research

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trial R&D as intellectually second rate.

The nation cannot afford to have this situation persist, and much more effort is required to overcome it. Even fundamental research that is not expected to yield short-term answers to industry's scientific problems can benefit from being informed by the technical concerns of industry. Conversely, US industry should have the benefit of easy and immediate access to the new knowledge and new talent generated by universities. Exchange of personnel, at all levels, is the surest answer to these problems.

***Renewing the Promise: Research-Intensive Universities and the Nation*, the President's Council of Advisors on Science and Technology, December 1992, available without charge from: National Science Foundation, Forms and Publications Office, 1800 G St. NW, Washington, DC 20550; tel. 202/357-7861.**

Commission on the Future of the National Science Foundation. Since the private sector plays the major role in the translation of knowledge into new products and services, and since the speed and efficiency of this process is an important factor in a productive and growing economy, it is appropriate that the NSB [National Science Board, policymaking body of the National Science Foundation] involve the private sector more fully than heretofore in the decisions which affect the classes of research allocation as well as some evaluation of the effectiveness of expenditures. It is more than incidentally significant that scientific advances are as likely to be driven by advances in technology as the reverse and the interplay between parties who are conversant in both fields holds promise of synergy.

***A Foundation for the 21st Century: A Progressive Framework for the National Science Foundation*, report by the National Science Board Commission on the Future of the National Science Foundation, November 20, 1992, available without charge from: NSF, National Science Board, Room 545, 1800 G St. NW, Washington, DC 20550; tel. 202/357-9582.**

National Science Board Committee on Industrial Support for R&D. Federal support of R&D directly relevant to industrial competitiveness should be increased. The primary need is to reorient Federal R&D budgets away from noncivilian government missions and toward the needs of industry. More programs should be created that encourage the interaction of scientists and engineers in universities and industry in exploring joint research interests that hold the promise of pioneering discoveries and inventions. In traditional and nontraditional education programs that motivate creativity, innovation and entrepreneurship should be encouraged.

***The Competitive Strength of US Industrial Science and Technology: Strategic Issues*, August 1992, available without charge from: NSF, National Science Board, Room 545, 1800 G St. NW, Washington, DC 20550; tel. 202/357-9582.**

Bill Clinton. In essence, science policy is a supply-push policy in which the government supports science education, basic research and some applied R&D that relates to specific national missions. During the Cold War, this policy worked well because US industry dominated world markets and massive US defense spending for high-tech weapons systems provided a big demand for leading edge technology. Today, however, US industry faces intense international competition, and the global civilian market, not the Department of Defense, is the testing ground for most of the new technologies.

Technology policy picks up where science policy leaves off. It is not limited to just research and development. It also focuses on the rapid application of new ideas. The absence of a technology policy is one of the key reasons why America is trailing some of its major competitors in translating its strength in basic research into commercial success, and why America is losing its lead in technology....

Federal labs which can make a significant contribution to US competitiveness should have 10 to 20 percent of their existing budget assigned to establish joint ventures with industry.... Funding for basic university research should continue to be provided for a broad range of disciplines, since it is impossible to predict where the next breakthrough may come. While maintaining America's leadership in basic research, government, universities and industry must all work together to take advantage of these breakthroughs to enhance US competitiveness.

***Technology: The Engine of Economic Growth: A National Technology Policy for America*, Clinton campaign statement issued September 21, 1992.**

NSF Revises Budget Plans

Forced to reshuffle its budget plans because of an unexpected Congressional reduction in research funds, the National Science Foundation has chosen to favor trendy programs in manufacturing research, materials, and computers while expressing vague hopes about increasing the size of grants for individual investigators.

The last Congress held NSF's Research and Related Activities account to $1.859 billion, $13 million below the previous year's figure. In response, NSF plans to parcel out the funds for the present year as follows:

Manufacturing research and education will increase by 18.7 percent, to $104 million, while programs in advanced materials and processing are slated to rise by 14.2 percent, to $303.6 million. Biotechnology goes up by 9.3 percent, to $190 million; high-performance computing and communications up by 12.5 percent, to $225 million, and global change research up by 15 percent (total sum unstated).

The "base research programs" in Biological Sciences and Mathematical and Physical Sciences will decline by 8-10 percent. Funds for Science Centers will remain level.

More IN PRINT: Talking to Congress, S&T Agenda

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High Performance Computing and Communications: Panel Report (4 pp.), reports favorably on the federal initiative to promote high-performance computing and related communications technologies, but says the program "overemphasizes processing speed relative to other computing needs, for example, memory storage, visualization, and user interface." The report also states that "Some [federal] agencies may be overemphasizing support for existing constituencies over program objectives." Sol Buchsbaum chaired this one.

Order the above PCAST panel reports from: Office of Science and Technology Policy, Executive Office of the President, Washington, DC 20506; tel. 202/395-4692.

Working With Congress: A Practical Guide for Scientists and Engineers (153 pp., $12.95, plus $4 for shipping), an excellent primer, just in time for the Congressional-hearing season, in which scores of scientists and engineers will testify on R&D budgets, policies, and programs. Prepared for the American Association for the Advancement of Science by William G. Wells Jr., a veteran of Washington sci-tech posts, now at George Washington University, this volume clearly describes the workings of the Congress and provides sound advice on how to have an impact on harried legislators. Among its educational anecdotes is the one about the US Senator who, following a meeting with a group of scientists, said, "They were with me for 20 minutes, and when they left I still had no idea why they had come to see me." That's okay for faculty senate meetings. But on Capitol Hill, Wells recommends: "Make clear why you are there." Lots more along the same lines.

Order from: AAAS Books, PO Box 753, Waldorf, Md. 20604; tel. 301/645-5643.

National Directory of US Energy Periodicals (first edition, revised, 50 pp., $12.50), from Public Citizen, umbrella organization of the Ralph Nader empire, a list, with addresses, telecommunication numbers, prices, etc. of over 700 journals, magazines, and newsletters that "report on renewable energy, energy efficiency, nuclear power, fossil fuels, electric utility, and related environmental issues."

Also, a companion publication: ***National Directory of Safe Energy Organizations*** (6th edition, revised, 65 pp., $12.50), lists "over 1000 citizen and other not-for-profit groups around the country that are actively promoting improved energy efficiency and renewable energy technologies or opposing commercial nuclear power plants, nuclear weapons facilities, and proposed nuclear waste sites."

The directories are also available on disk for $65 each or $100 for the pair (DBF-Extension; 5 1/4" DS/DD; also available in ASCII and on 3 1/2" disk).

Order from: Public Citizen, SUN DAY 1992, 215 Pennsylvania Ave. SE, Washington, DC 20003; tel. 202/547-7392.

Federal Ground-Water Science and Technology Programs: The Role of Science and Technology in Addressing Four Significant Ground-Water Issues (82 pp., no charge), from the Federal Coordinating Council for Science, Engineering, and Technology, an offshoot of the White House Office of Science and Technology Policy, an assessment of perils to ground-water sources focused on: assuring long-term supply, remediating contamination, minimizing agricultural contamination, and prevention of nuclear contamination.

Order from: US Geological Survey, 104 National Center, Reston, Va. 22092; tel. 703/648-4450.

A Science and Technology Agenda for the Nation: Recommendations for the President and Congress (37 pp., no charge), from the Carnegie Commission on Science, Technology, and Government, another manifestation of its belief that deficiencies in the organization of federal science advice contribute to US economic woes. Several recommendations flow from this perception, including: "Give the [White House] Office of Science and Technology Policy lead responsibility for identifying and evaluating policy issues related to the technological aspects of economic performance." Historically, the Science Office has never had more than a small voice when it comes to big matters. But, with a new Administration coming in, who knows how power and responsibilities might be shuffled around?

Order from: Carnegie Commission on Science, Technology, and Government, 10 Waverly Place, New York, NY 10003; tel. 212/998-2150.

IN PRINT: A Late Gusher From Bush's Science Office

After going public with only a trickle of policy publications over the past three and a half years, George Bush's science advisers are departing with a torrent of official print. In large part, the swansong surge originated in expectations of a second term in which these pronouncements on research-related matters would provide guidance for policy and programs. It would be a mistake, however, to conclude that electoral fate has transformed the documents into political relics. On most science-policy issues, mainstream Democrats and Republicans are close kin. The views expressed can be considered those of the management, regardless of who occupies the White House. The publications are available without charge and can be ordered as indicated below:

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Renewing the Promise: Research-Intensive Universities and the Nation (46 pp.), under the imprint of the President's Council of Advisors on Science and Technology (PCAST), examines the fiscal and managerial pains of big academic science, and concludes that the 150 or so universities in the business must trim their aspirations and also give more attention to teaching. The academic tilt of this study is evident in a proposal to give universities a shot at competing for basic-research funds now allocated to government labs. The study was chaired by David Packard, retired cofounder of Hewlett-Packard, with Harold Shapiro, President of Princeton, as Vice Chairman. The report is a follow-on to a fruitless 1986 White House report on the fiscal needs and administrative gripes of university-based science and engineering, *A Renewed Partnership,* prepared by a panel co-chaired by Packard and D. Allan Bromley, the current White House science adviser.

In the National Interest: The Federal Government and Research-Intensive Universities (59 pp.), complements the Packard-Shapiro report from the perspective of the 17 agencies that provide most of the federal support for academic science. This one contains lots of boilerplate about government responsibilty for science and an abundance of trite statements, e.g., "Universities must understand that Federal research expenditures are limited." And, "On the whole, the [Department of] Interior bureaus are satisified that they have constructive and productive relationships with universities." The report was prepared for the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) by a committee chaired by NSF Director Walter Massey, who filled in because of the illness of the originally named Chairman, Deputy Secretary of Education David Kearns.

Trends in the Structure of Federal Science Support (160 pp.), a big assemblage of data on support of science from fiscal 1980-89 by NIH, NSF, DOE, EPA, NASA, and USDA. Included are details on the division of funds among individual investigators, research groups, centers, and major facilities, as well as support for various disciplines, training, and instrumentation. For aficionados of science statistics, this is a good one.

Order from: National Science Foundation, Forms and Publications Office, 1800 G St. NW, Washington, DC 20550; tel. 202/357-7861.

Also a flock of reports, mostly thin and inconsequential, by panels of the President's Council of Advisors on Science and Technology (available as a package without charge):

Achieving the Promise of the Bioscience Revolution: The Role of the Federal Government (10 pp.), a perfunctory inventory of widely discussed issues in biotechnology—patents, federal-industrial relations, conflict-of-interest regulations, etc. Why this was published is not apparent. The panel producing it was chaired by Daniel Nathans, Professor of Molecular Biology and Genetics, Johns Hopkins School of Medicine.

Technology and the American Standard of Living (4 pp.), a rah-rah pamphlet cheering the economic potential of science, technology, and education. This one was captained by Ralph Gomory, President of the Sloan Foundation.

Learning to Meet the Science and Technology Challenge (42 pp.), a heap of warmed-over observations and recommendations from the copious literature of educational discontent. It's all valid, but having been said so many times before, the necessity for a reiteration by PCAST eludes detection. Peter Likins, President of Lehigh University, chaired the panel.

Megaprojects in the Sciences (28 pp.), the best of the batch, this one discusses the burdens imposed on the research economy by the costs of big-science machines and programs—the Superconducting Super Collider, the Space Station, Human Genome Project, etc. Pointing out that mega-equipment dates back to the early days of science, and is often indispensable for advancing important fields of research, the report acknowledges merits in international cost-sharing but notes, too, that multilateral partnerships spawn their own problems. Long-term US budget planning and financial commitments would be a big help, the report says, especially for overcoming the perception of the US as "an unreliable partner" in scientific deals. The panel was chaired by John McTague, Vice President for Technical Affairs, Ford Motor Co.

Science, Technology, and National Security (14 pp.), says shrinking budgets for procurement of defense hardware elevates the importance of R&D as a source of military strength. It adds that diffusion of advanced military technologies—nuclear, chemical, biological, and conventional—among smaller nations is potentially the biggest threat to American security, and urges improved intelligence to counter proliferation. The panel was co-chaired by Sol Buchsbaum, Senior Vice President, Technology Systems, AT&T Bell Labs, and John Foster Jr., former Director of Defense Research and Engineering.

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